

§ 112 Rejections

Claim 17 is rejected by the Examiner under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Claim 17 has been canceled, and Applicant requests this basis for rejection be removed from the case.

Claims 5-16 are rejected by the Examiner under 35 C.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically the Examiner states that claims 5-16 are indefinite for recitation of the phrase "said sequences" because it is not clear which of the sequences in the claims from which claims 5-16 depend the phrase refers to. Claims 5-16 have been amended to address the Examiner's comments. Specifically, each claims that requires it (claims 5-7 and 16) has been amended to specifically reference either the "repeat sequences" or the query sequence." These amendments fully address the Examiner's basis of rejection and Applicant requests the basis be removed from the case.

§ 103 Rejections

The Examiner rejects claims 2, 3, 5, 7, 8, 18-20, 27 and 30 under 35 U.S.C. 103(a) as being unpatentable over Jurka et al. (1996).

The Examiner takes the position that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method of Jurka et al. (1996) by addition of newly determined repeat sequences to a repeat sequence database so that the repeat sequence database would be a more comprehensive listing of repeat sequences.

The Examiner also rejects claims 2, 6, 15, 16, 19-24, 26-29, and 31-33 under 35 U.S.C. 103(a) as being unpatentable over Jurka et al. (1996) as applied to claims 2, 3, 5, 7, 8, 18-20, 27, and 30, and further in view of Altschul et al. The Examiner argues that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method of Jurka et al. (1996) as applied to claims 2, 3, 5, 7, 8, 18-20, 27, and 30 by use of analysis of ribonucleotide sequences, sequences that encode amino acid sequences, repeat sequence databases accessible through the internet, use of public domain databases GenBank, dbEST, and SwissProt, use of search algorithms BLAST and FASTA, and use of scoring matrices PAM and BLOSUM because Altschul et al. shows use of all of those features in the context of searching sequence databases with query sequences whose repeat sequences have been masked.

The Examiner also rejects claims 2, and 7-14 under 35 U.S.C. 103(a) as being unpatentable over Jurka et al. (1996) as applied to claims 2, 3, 5, 7, 8, 18-20, 27, and 30 above, and further in view of Jurka (1998). The Examiner takes the position that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method of Jurka et al. (1996) as applied to claims 2, 3, 5, 7, 8, 18-20, 27, and 30 by use of repeat sequences from a variety of organisms so that corresponding query sequences from the organisms could be analyzed and masked.

Claims 2, 22, and 25 are rejected by the Examiner under 35 U.S.C. 103(a) as being unpatentable over Jurka et al. (1996) as applied to claims 2, 3, 5, 7, 8, 18-20, 27, and 30 above,

and further in view of Sohocki et al. According to the Examiner's reasoning, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method of Jurka et al. (1996) as applied to claims 2, 3, 5, 7, 8, 18-20, 27, and 30 above by use of TIGR Human Gene Index database because Sohocki et al. shows that the database is a useful source of human genes such as genes related to inherited retinal disorders.

Applicant's Response to § 103 Rejections

First, Claim 39, which claim remains in the case and which claim has not been rejected under any § 103 basis would appear to be allowable. Applicant requests that the case be allowed at a minimum with claim 39 surviving.

The reminder of the claims stand rejected as noted above under § 103 chiefly our Jurka (1996), alone in combination with Altschul, Jurka (1998), and Shohocki.

The cited chief reference of Jurka (1996) fails to teach at least one of the key inventive points of the present invention. This failure in teaching is not cured by or obvious over any of the secondary references cited. All of the art cited deals with taking an "unknown" sequence and querying it against a known sequence database to see where it fits in the broader sequence picture (a typical search against a database of "known" things and then categorize and report the results). In doing so, all of the cited art teaches away from the present invention as noted below.

Conversely to Jurka (1996) and the cited secondary art, the present invention teaches the computer how to deal with hoardes of random snippets of DNA sequence information, assemble them into contigs, and during the process "learn" how to identify and "mask" novel repetitive elements (which otherwise greatly confuse the assembly), and then reassemble the data via an

iterative "learning" process that identifies new repeats and "remembers" to delete them from the subsequent assembly (by adding them to the "known" repeat/masking database).

In fact, the type of searching and processing described in Jurka (1996) and the secondary cited art is clearly intended to be performed BEFORE the presently claimed invention/program is applied (i.e., each of the sequences is scanned against a "known" repeat database and all known sequences are masked prior to the sequence being used in the assembly). In addition, as directly opposed to any of the teaching of the cited art, the presently described invention is designed to work within a single species as opposed to the cross-species aspects of the cited references (the present invention does not look for new repeats by comparison to known repeats from other organisms as is taught by the cited references).

Therefore, as the cited art clearly teaches away from the present invention, and as the cited art fails to teach at least one of the key inventive points of the present invention which failure is not cured by or made obvious over any of the secondary references, Applicant respectfully requests removal of this basis of rejection.

All bases for rejection of the claims has been fully addressed and overcome. Applicants respectfully request that the case be allowed.

The Commissioner is authorized to charge to McDaniel & Associates P.C. Deposit Account No. 50/1085, any fee for extension of time deemed necessary to make timely the filing of this response.

Respectfully submitted,

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C. Steven McDaniel
Registration No. 33,962

McDaniel & Associates, P.C.
P.O. Box 2244
Austin, Texas 78768-2244
(512) 472-8282